Hardware Assignment

AI1110: Probability and Random Variables

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Abstract

In this assignment we have made a Random number generator using shift registers

COMPONENTS USED

Component	Value	Quantity
Breadboard		1
Seven Segment Diplay	Common Anode	1
Decoder	7447	1
Flip Flop	7474	2
X-OR Gate	7486	1
555 IC		1
Resistor	1 KΩ	1
Capacitor	100 nF	1
Capacitor	10 nF	1
Jumper Wires		

TABLE 0

COMPONENTS USED

PROCEDURE

1) First ee connect the 555 timer circuit according to the figure 1
2) Then we connect Clock output of 555 timer circuit to the clock signal of D-Flip flops
3) Now we make the circuit for shift registers using 4 D-Flip flops (using two 7474 IC's)
4) Then we connect XOR gate (7486 IC) according to the figure 4
5) After that we connected the decoder (7447 IC) and connected its A,B,C,D with Q_0,Q_1,Q_2,Q_3 respectively as per the figure 5
6) Then we place The seven segmented display and connect it with the dceoder (7447 IC) according to the table 6 and the figure 6
7) We connect all the independent parts with each other and connect it to the power source
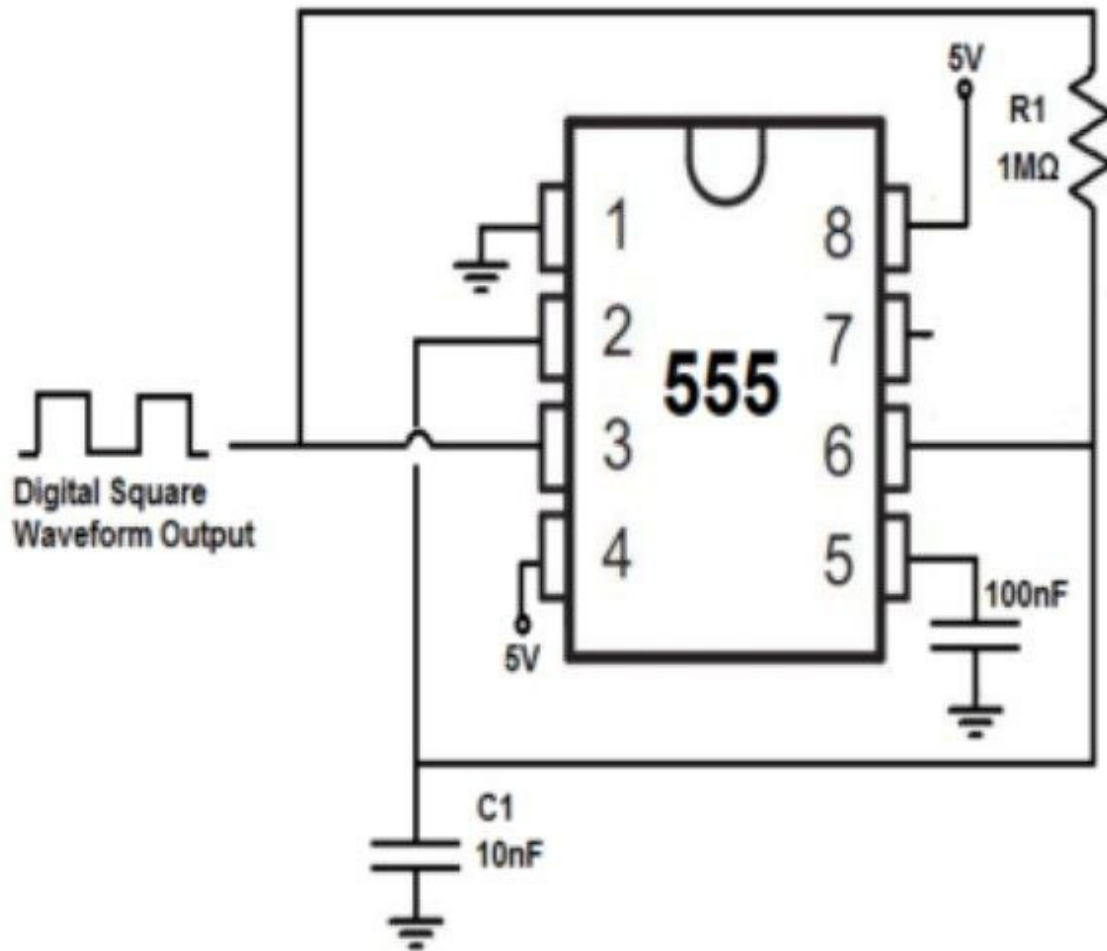8) Output was changing digits on the seven segment display the output is shown in figure 8
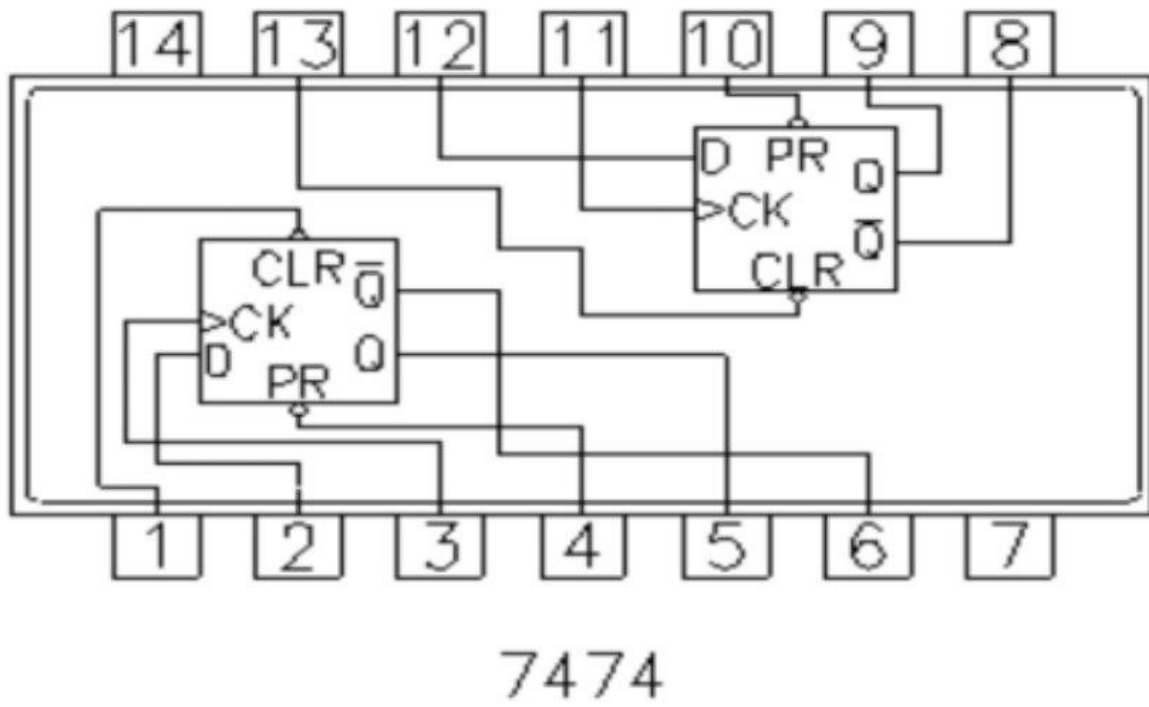
Fig. 1. Connection in 555 timer circuit
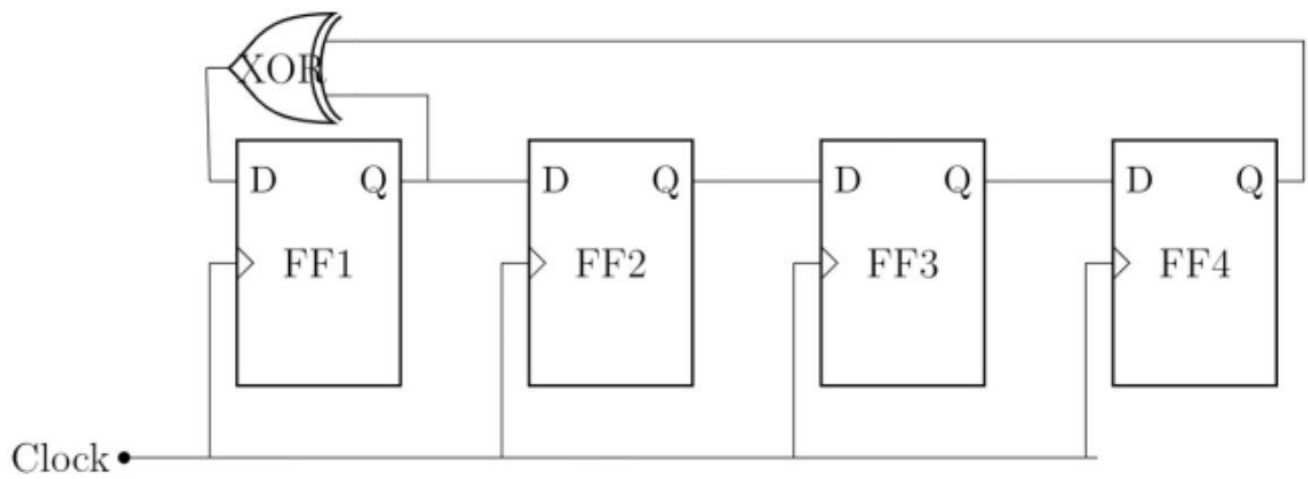
Fig. 3. Connection in 7474 IC

Fig. 4. Connection in XOR gate

Vcc	$\bar{f}$	$\bar{g}$	$\bar{a}$	$\bar{b}$	$\bar{c}$	$\bar{d}$	$\bar{e}$
16	15	14	13	12	11	10	9

7447

1	2	3	4	5	6	7	8
B	C	$\overline{LT}\,\overline{BI}/\overline{RBO}$	$\overline{RBI}$	D	A	GND

Fig. 5. Connection in Decoder gate

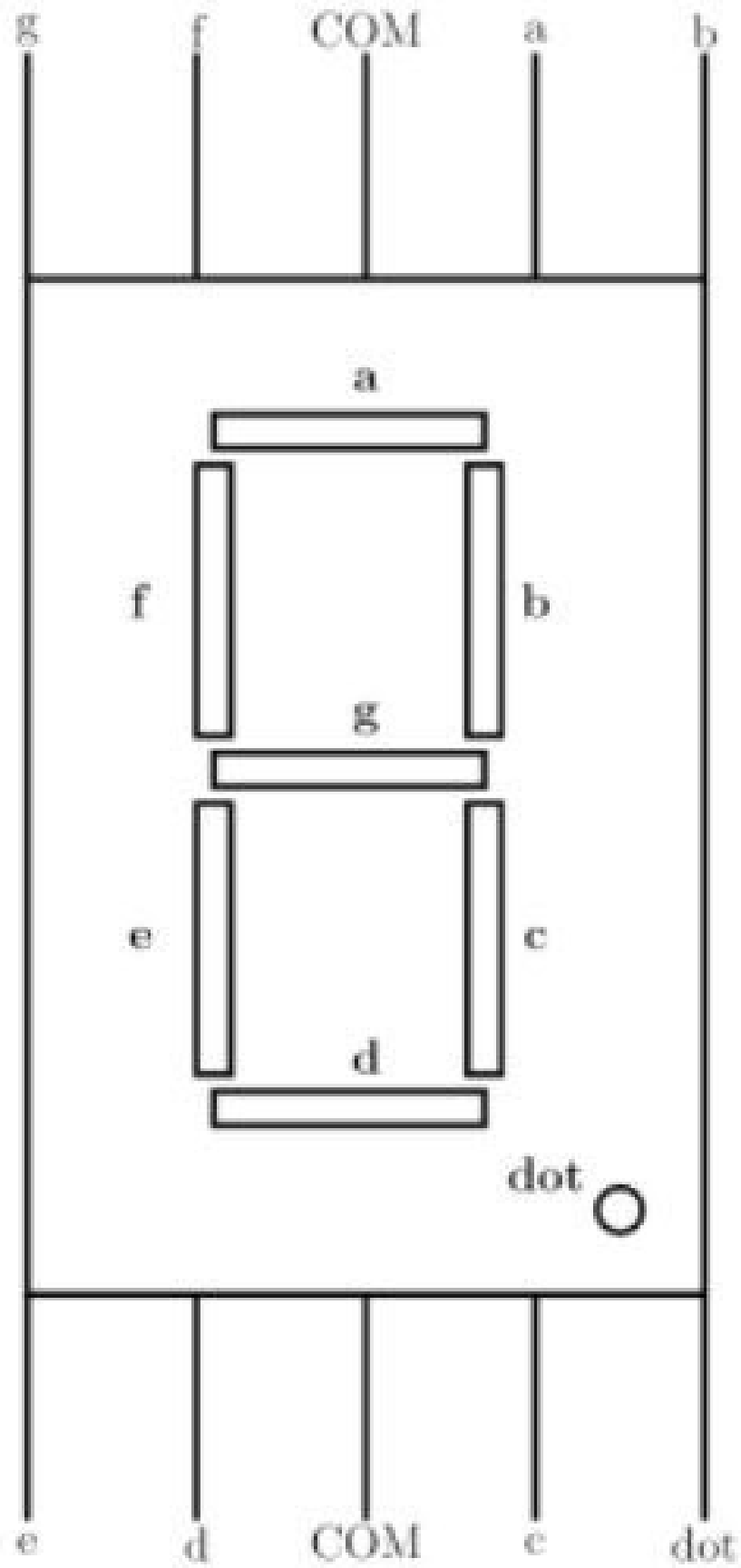| 7447	$\bar{a}$	$\bar{b}$	$\bar{c}$	$\bar{d}$	$\bar{e}$	$\bar{f}$	$\bar{g}$
Display	a	b	c	d	e	f	g

Fig. 6. Connection of seven segmented display with decoder

Fig. 6.   Seven segmented display

Fig. 8. output